APPROXIMATE OVERALL STATISTICS CONCERNING ANOPHELINE ERADICATION PROJECTS

Zone	Anopheline species	Area involved	No. of men employed	Total time	Cost £1,000's*
Brazil	*gambiæ*	?	2000	3½ yr.	530
Upper Egypt	*gambiæ*	4,100 sq. km. 1,500 sq. miles	4000	2 ,,	800
Cyprus	*superpictus, sacharovi,* etc.	9,300 sq. km. 3,600 sq. miles	100	3 ,,	15 (7 months)
Sardinia	*labranchiæ*	23,000 sq. km. 9,000 sq. miles	6000†	3† ,,	more than 500† a year

* On the basis £1 = 4 dollars = 2,000 lira.
† Estimates.

Some overall statistics of the anopheline eradication campaigns are given in the accompanying table. It should, however, be pointed out that such operations are very difficult to compare by the use of such overall figures, or by examining small-scale maps. For example, the area which can be covered by a single larvicider will depend not only on the number of breeding sites present and the ease of travelling, but also on accessibility from sleeping quarters. Some labourers may be unwilling to leave their homes and enter a temporary unusual occupation, especially if they have relatively lucrative local employment. For such reasons as these, there may be manifold differences in the difficulties encountered in such operations in different areas ; nevertheless, it cannot fail to be noticed that the Cyprus venture appears to be very much less expensive than the other ones.

It is too early to give an estimate of the chances of ultimate success of the campaigns now in progress. My visit to Sardinia strongly impressed me with the difficulties of adequately supervising work over such a large and inaccessible area. These latest eradication schemes demand all the faith and energy, as well as the technical and administrative skill, which are being devoted to them.

SCIENTIFIC RESEARCH IN THE BRITISH ZONE OF GERMANY

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FOR the second time within a period of thirty years, science in Germany is struggling for its existence ; but the problems of to-day are different from those of 1918, and so are the ways and means by which a solution is being attempted.

When, after the First World War, Germany had collapsed, the greatest menace to the maintenance of its scientific standing was, besides the financial weakness of the country, the severing of all international relations. German men of science had done more than their colleagues in other countries to help their Government, and especially the systematic study of the possibilities of poison gas as a method of warfare was deeply resented by the Allies. It took a long time before Germans were permitted to participate again in international meetings, the delay being largely dependent on the share taken in war-work ; German astronomers were admitted years before German chemists. In these circumstances, only a national effort could save the position of German science ; but the complete exhaustion of all the usual financial resources seemed to present an insurmountable obstacle. It was mainly the foresight, energy and organising genius of one man, Fritz Haber, to which the preservation of the high level of German science was due : while traditionally only the 'Länder' were the supporters of university activities, he convinced the authorities of the 'Reich' that in this emergency they had to provide ample funds for scientific work of every kind. Under his influence the Notgemeinschaft der Deutschen Wissenschaft came into being, and science in Germany continued to flourish.

To-day the material position of the scientific institutions in Germany is infinitely worse than it was after the First World War ; but, on the credit side, it can be stated that there is little sign of any moral discrimination between men of science inside and outside Germany. This is no doubt due to the fact that this time support of the Governments was certainly more whole-hearted in the Allied field, right up to the perfection of the most powerful weapon of aggression. Immediately after the armistice, contacts were made between the scientific workers of the Allied countries and their German colleagues. The first object was to obtain all possible information for the benefit of the Allies ; but these discussions could not fail to result in the awakening of the old spirit of international solidarity so sadly interrupted during the War, and to-day it is very pleasant to see the efforts made by the occupying Powers to reactivate scientific life and research in Germany. There are differences between the four zones of occupation, and in some regions the endeavour went mainly in the direction of uprooting and transplanting scientific installations and workers, instead of giving them a fresh opportunity in Germany. Moreover, it seems that even members of the universities who had been dismissed as a consequence of the unfavourable verdict of a denazification tribunal were often tempted by offers of employment in other countries, previous enthusiastic support of the Nazi war machine now being no obstacle. Much more evident, however, at least in the British Zone, is the understanding help given by the Allies to all attempts at reviving the scientific activities inside Germany.

As a consequence of the country's unconditional surrender it was entirely for the Allies to decide how much scientific research should be permitted in Germany. The rules were laid down in the Allied Control Council Law No. 25, the object of which is "to prohibit for military purposes scientific research and its practical application, to control them in other fields in which they may create a war potential and to direct them along peaceful lines". A number of subjects are specifically mentioned as prohibited : for example, applied nuclear physics ; applied aerodynamics ; ship construction ; the detection of objects by electromagnetic radiation. Work on other problems requires prior permission, as, for example, research on broadcasting and television, electronic valves, ball bearings, and radioactivity other than for medical purposes. Detailed regulations have been issued for the procedure according to which applications for permission, and periodical reports on the work done, have to be submitted to the Control Council.

It is clear that the effect of Law 25 on German science will depend on the spirit in which it is inter-

preted; and that spirit, in the British Zone, is very favourable. Göttingen, one of the few university towns in Germany where war damage has been negligible, has been chosen as scientific headquarters. Here the office of the Research Branch of the Economic Subcommission of the Control Commission has been set up; its scientific adviser is Dr. R. G. J. Fraser. Plans are under way to create in Göttingen a substitute for the former research centre of Berlin-Dahlem, where a great number of the famous institutes of the Kaiser Wilhelm Gesellschaft were situated, and which no longer exists. The Allgemeine Versuchs-Anstalt (AVA) in Göttingen is not only using existing buildings but also planning to erect new ones to house institutes for physics, fluid flow, brain research, instrument design, and particularly medical research, to which special assistance will be granted.

The support given by the Research Branch and its officials to German science is by no means confined to the Göttingen complex. A new institute for the standardization of physical quantities, in the tradition of the former Physikalisch-Technische Reichsanstalt, is in course of formation in Volkenrode (near Brunswick). Another sphere of the Research Branch's activities is in the newly created learned societies; because of their official Nazi affiliations the German Physical Society, the German Chemical Society, and many similar ones were disbanded; but a new German Physical Society in the British Zone held its second conference in Göttingen at the beginning of last September (see *Nature*, November 22, 1947, p. 723), to be followed a month later by a meeting in Bonn of the Society of German Chemists in the British Zone. Both meetings were attended by a number of foreign scientific workers.

It is well known that in certain branches of chemical documentation Germany had been leading for many decades; no reference work on organic chemistry can compare with "Beilstein", none on inorganic chemistry with the eighth edition of "Gmelin", both of which are publications of the German Chemical Society. Both are still incomplete, and it is very gratifying to learn that, after a period of uncertainty following Germany's collapse, provision has now been made for their continuation. "Beilstein" will be re-organised in the American Zone, but some difficulties may be expected owing to the loss of a few of the senior members of the original editorial staff; "Gmelin", on the other hand, is fortunate in that practically the entire staff is now re-assembled in the British Zone, as the Gmelin Institute for Inorganic Chemistry and Related Subjects. Its new organisation presents some interesting features, so a few more words may not be amiss.

In Clausthal, near Göttingen, buildings of a munition factory had been scheduled to be blown up by the army; thanks to the intervention of the Research Branch, the administrative block was spared, in which at the moment the chief editor of "Gmelin", Prof. E. Pietsch, and about fifty of his old helpers have not only their offices but also living quarters for themselves and their families. The great hardships of life in present Germany are thus mitigated; the housing problem is solved, and the purchase of fuel and food is a community affair. The beneficial influence on the scientific productivity of the "Gmelin" staff is very obvious; and as, fortunately, a photographic copy of the 900,000 odd reference cards which the staff had prepared in the course of twenty years has been saved (although the originals were destroyed by fire), the editor's hope of completing the new edition of "Gmelin" in ten years may well come true.

There is probably no scientific worker in Germany who would not appreciate the help given by the Allies in the revival of the various scientific activities, though some seem to think that the possible control of their work by international committees is no unmitigated blessing. It would certainly be regrettable if control, or even advice, should go so far as to make work appear international which is, in fact, due to the efforts of German specialists. In this connexion we should like to refer again to the very different situation which existed in Germany after the First World War, when the necessity of keeping science in Germany alive by its own exertion, against international detachment or even hostility, proved to be in itself a potent force in its recovery. One can understand that to-day there is in some quarters a slight resentment against too much patronizing from outside; but what seems to some justified national pride may easily be denounced by others as a remnant of Nazism. All the steps taken by the British Control Commission with respect to scientific activities in Germany have to be viewed against a very complex psychological background; considering that such difficulties are added to those due to the hard material conditions, everyone will gladly acknowledge that, thanks to the Research Branch of the Control Commission, a great deal has already been achieved, and that one can cherish very good hopes for the future.

WATER MOVEMENTS AND EARTH CURRENTS: ELECTRICAL AND MAGNETIC EFFECTS*

IT is a consequence of Faraday's law of electromagnetic induction that when a large body of water moves in the presence of the earth's magnetic field, an electromotive force is set up across the direction of motion. Faraday himself said that the tidal streams in the English Channel would generate electric currents across the channel, through the sea, and returning through the land beneath the water. Twenty years later (1851) he was satisfied that fluctuations observed by Charlton Wollaston on the first submarine cable between England and France were due to this effect. Other early observations tended to confirm the connexion of the tides with earth currents in submarine cables and in coastal regions.

No serious study of the subject was made at the time, but a great step forward was made in 1918 when Young, Gerrard and Jevons made a series of experiments with electrodes in the sea at Dartmouth, and Decheverens demonstrated the dependence of the fluctuating earth-current on the tides in one of the Channel Islands. Another striking contribution was made by Cherry and Stovold, who observed fluctuation of tidal periods between the English and French coasts when Post Office cables were being renewed after the Second World War, the largest differences being as much as 0·8 volt. Several Admiralty departments have also observed submarine fluctuations of tidal period, and the subject is being studied

* Substance of papers by N. Barber and M. S. Longuet-Higgins, Admiralty Research Laboratory, read at a Geophysical Discussion on "The Electrical and Magnetic Effects of Marine Currents" held at the Royal Astronomical Society on November 27.